WHAT IS CLAIMED IS:

Sub A1

1. A driving arrangement for an active matrix liquid crystal display comprising:

(a) a multi-format digital data driver arranged to operate in a plurality of different display modes, to receive digital input data in a plurality of different formats, and to drive data lines of the liquid crystal display so as to cause an image to be displayed by the display corresponding to said input data; and

(b) data analysis means arranged to receive said digital input data, to determine the format of the input data, and to control the data driver to operate in the display mode corresponding to the format of the input data.

2. A driving arrangement as claimed in claim 1, wherein the data analysis means forms part of the data driver.

3. A driving arrangement as claimed in claim 1, wherein the data driver is arranged to consume less power in low resolution display modes compared to high resolution display modes.

4. A driving arrangement as claimed in claim 1, wherein said display modes include at least one 1-bit overlay mode.

5. A driving arrangement as claimed in claim 1, wherein the data analysis means analyses each frame of input data in turn, and updates the mode of the data driver at the end of each frame.

6. A driving arrangement as claimed in claim 1, wherein the data analysis means comprises frame comparison means for comparing each frame of input data with the next, and for determining if the input data for a number of consecutive frames is the same.

7. A driving arrangement as claimed in claim 6, wherein the data driver is arranged to operate at more than one refresh rate, and wherein the data analysis means is arranged to control the data driver to operate at a lower refresh rate if the comparison means determines that the input data has remained unchanged for a number of frames.

8. A driving arrangement as claimed in claim 1, wherein the data analysis means comprises a plurality of inputs

each arranged to receive a single bit of said digital input data, and wherein at least some of said inputs are connected to a logic OR gate arranged to detect activity on one or more of said at least some inputs.

9. A driving arrangement as claimed in claim 1, wherein the data analysis means is arranged to supply format control signals to the data driver in order to control the display mode of the data driver.

10. A driving arrangement as claimed in claim 9, wherein said format control signals include at least high and low resolution control signals.

11. A driving arrangement as claimed in claim 1, wherein the data driver comprises a plurality of variable bit resolution digital to analogue converters.

12. A driving arrangement as claimed in claim 1, wherein the data driver comprises a plurality of digital data input channels arranged to receive said digital input data.

13. A driving arrangement as claimed in claim 1, wherein

the data analysis means comprises a number of storage registers.

14. An active matrix liquid crystal display comprising a driving arrangement as claimed in claim 1.

15. An active matrix liquid crystal display as claimed in claim 14, wherein the driving arrangement is integrated monolithically onto the same substrate as the thin film transistors of the active matrix.

16. An active matrix liquid crystal display as claimed in claim 15, wherein said thin film transistors are poly-silicon

17. A method of reducing the power required to display a sequence of images on a liquid crystal display, comprising the steps of:

analysing the image data representing each image,

comparing the image data for the current image with that for the previous image,

from the comparison of the previous step, determining whether the two images are the same, or substantially the same,

if the images are the same, or substantially the same, then not updating the liquid crystal display with at least the subsequent image, in order to reduce the power consumption of the liquid crystal display.

18. A method as claimed in claim 17, wherein if said two images are determined to be the same, or substantially the same, then the liquid crystal display is prevented from being updated by more than one subsequent image.

19. A method as claimed in claim 17, wherein the step of analysing the image data for each image involves producing a signature for each image.

20. A method as claimed in claim 19, wherein said signature is the sum of all data bits representing the image.

21. A method as claimed in claim 19, wherein said signature is more complex than a simple sum, and takes into account the sequence of data bits representing the image.

22. A method as claimed in claim 21, wherein said signature is produced using a linear feedback shift register.

23. A method as claimed in claim 19, wherein at least some of the bits representing the brightness level of each pixel are ignored when producing said signature.

24. A method as claimed in claim 23, wherein the bit or bits which are ignored are the least significant bit or bits.

25. A method as claimed in claim 17, wherein said sequence of digital images occupy only a part of said liquid crystal display.

26. A method as claimed in claim 25, wherein said liquid crystal display is divided into a plurality of regions, and the steps of the method are carried out separately for each region, so that if the current and previous images for a given region are determined to be the same, or substantially the same, then that region is not updated with at least the subsequent image, or portion of an image, for that region.

27. A method as claimed in claim 17, wherein if it is determined that the liquid crystal display, or a portion thereof, is not to be updated, a first control signal is

sent to a data driver associated with the liquid crystal display, said first control signal preventing the liquid crystal display, or a portion thereof, from being updated.

28. A method as claimed in claim 17, wherein if it is determined that the liquid crystal display, or a portion thereof, is not to be updated, a second control signal is sent to a frame store associated with the liquid crystal display, said second control signal preventing image data from being written out of said frame store.

29. A method as claimed in claim 17, wherein in the step of determining whether said two images are the same, or substantially the same, said two images are considered to be substantially the same if the current image represents a translation, or substantially a translation, of the previous image.

30. A method as claimed in claim 29, wherein said step of analysing the image data includes:

producing a first sub-signature for a first region of a first image, and

producing a second sub-signature for a second region of the first image, wherein said first region of the first

image corresponds to a translation of said second region of the first image by one or more pixels, and

producing a first sub-signature for a first region of the subsequent image, and

producing a second sub-signature for a second region of the subsequent image, wherein said first region of the subsequent image corresponds to a translation of said second region of the subsequent image by one or more pixels, and

comparing said first and second sub-signatures for the first image with said first and second sub-signatures for the subsequent image, to determine whether the subsequent image represents a translation, or substantially a translation, or the first image.

31. A method as claimed in claim 30, wherein each sub-signature is produced using a linear feedback shift register.

32. A method as claimed in claim 30, wherein at least 8 sub-signatures are produced for each of said first and subsequent images, said sub-signatures corresponding to translations in different directions.

33. A method as claimed in claim 30, wherein said first and second regions of the first and subsequent images do not include any pixels which lie adjacent an edge of the images.

34. A method as claimed in claim 17, wherein said liquid crystal display is DC balanced, and wherein if the liquid crystal display is not updated, the polarity applied to pixels in subsequent frames is such that DC balance is retained over time.

35. A method as claimed in claim 34, wherein if the liquid crystal display is not updated for one or more frames, then the polarity, or polarities, applied to pixels on the first subsequent frame which is updated is or are the same as the polarity or polarities existing during said one or more frames.

36. Data analysis means arranged to carry out the method of claim 17.

37. Data analysis means as claimed in claim 36, which comprises a linear feedback shift register.

38. Data analysis means as claimed in claim 36, which further comprises a first control output arranged to provide a first control signal to a data driver, wherein if it is determined that the liquid crystal display, or a portion thereof, is not to be updated, said first control signal is sent to said data driver associated with the liquid crystal display, said first control signal preventing the liquid crystal display, or a portion thereof, from being updated.

39. Data analysis means as claimed in claim 36, which further comprises a second control output arranged to provide a second control signal to a frame store, wherein if it is determined that the liquid crystal display, or a portion thereof, is not to be updated, said second control signal is sent to said frame store associated with the liquid crystal display, said second control signal preventing image data from being written out of said frame store.

40. A liquid crystal display device comprising a liquid crystal display, a data driver, and a data analysis means as claimed in claim 36.